

## **REMARKS**

By this Amendment, Applicants cancel claim 7, without prejudice or disclaimer of the subject matter thereof, amend claim 1 to more appropriately define the present invention, amend claim 2 to correct an informality, and add new claims 8-13 to protect additional aspects related to the present invention. Applicants submit that no new matter has been added by any of these amendments.

In the Office Action ("OA"), the Examiner objected to claim 2; rejected claim 7 under 35 U.S.C. § 112, second paragraph; rejected claims 1, 2, and 4-6 under 35 U.S.C. § 103(a) as unpatentable over Morimoto, U.S. Patent No. 5,519,207, in view of Ino, U.S. Patent No. 5,317,432; and rejected claim 3 under 35 U.S.C. § 103(a) as unpatentable over Morimoto and Ino as applied to claims 1, 2, and 4-6, and further in view of Ha, U.S. Patent No. 5,401,685.

Applicants address the objection and rejections as follows.

### **I. Response to Claim Objection**

The Examiner objected to claim 2 as containing the following informality: silicon nitride ( $\text{SiN}_x$ ) and  $\text{Si}_3\text{N}_4$ . Applicants amend claim 2 to correct this informality. Accordingly, Applicants request that the Examiner withdraw the objection to claim 2.

### **II. Response to Rejection Under 35 U.S.C. § 112, second paragraph**

The Examiner rejected claim 7 under section 112, second paragraph, as being indefinite. Applicants cancel claim 7 without prejudice or disclaimer of the subject matter thereof. Accordingly, the rejection of claim 7 is rendered moot.

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### **III. Response to Rejections under 35 U.S.C. § 103(a)**

The Examiner alleged that claims 1-2 and 4-6 are unpatentable over Morimoto in view of Ino. In response, Applicants respectfully submit that a *prima facie* case of obviousness has not been established for these claims.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.03 (8<sup>th</sup> Ed., Aug. 2001) (quoting *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. See M.P.E.P. § 2143 at pp. 2100-122 to 127.

Claim 1 is directed to method for fabricating a CMOS image sensor comprising a combination of elements including, *inter alia*, "forming a metal line by sequentially depositing Ti/Al/TiN layers after an isotropic etching operation is carried out on [an] insulating layer."

In contrast, Morimoto is directed to a method for making a solid stage imaging pickup device. Morimoto, Figs. 1(a), 1(b). Morimoto discloses that the method comprises forming a photodiode and CCD register in a substrate 11, forming an insulating film 19 on the photodiode and CCD register, forming an electrode 20 on insulating layer 19, and forming a metal wiring 22. Morimoto, col. 3, line 50 to col. 4, line 35. However, Morimoto discloses that metal wiring 22 is formed of tungsten (W) or aluminum (Al). Morimoto, col. 4, lines 3-7. Moreover, Morimoto does not disclose that an isotropic etching is performed on insulating film 19. Thus, Morimoto

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fails to teach or suggest at least “forming a metal line by sequentially depositing Ti/Al/TiN layers after an isotropic etching operation is carried out on [an] insulating layer.”

Moreover, Ino fails to teach or suggest at least this claim element. Ino discloses a liquid crystal display device with a capacitor and a thin film transistor. Ino discloses that wirings for the liquid crystal display are formed of Al or silicon (Si). Ino, col. 19, lines 36-51. Thus, Ino fails to teach or suggest at least “forming a metal line by sequentially depositing Ti/Al/TiN layers after an isotropic etching operation is carried out on [an] insulating layer,” as recited in claim 1.

Therefore, since Morimoto and Ino, alone, fail to teach or suggest at least this claim element, Morimoto and Ino, when taken in combination, fail to teach or suggest all the elements of claim 1. Accordingly, a *prima facie* case of obviousness has not been established. For at least this reason, claim 1 is allowable.

Claims 2 and 4-6 are allowable at least due to their dependence from allowable claim 1. “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.” M.P.E.P. § 2143.03 at p. 2100-126 (citing *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988)).

The Examiner also alleged that claim 3 was unpatentable over Morimoto and Ino as applied to claims 1, 2, and 4-6, and further in view of Ha. Claim 3 depends indirectly from claim 1 and, thus, incorporates the elements of that claim. As mentioned above, Morimoto and Ino, when combined, fail to teach or suggest at least “forming a metal line by sequentially depositing Ti/Al/TiN layers after an isotropic etching operation is carried out on [an] insulating layer,” incorporated in claim 3. Moreover, Ha fails to teach or suggest at least this claim element. *See, e.g.,* Ha, col. 2, lines 8-63. Thus, Morimoto, Ino, and Ha fail to teach or suggest all the elements

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of claim 3. Accordingly, a *prima facie* case of obviousness has not been established for claim 3. For at least this reason, claim 3 is allowable.

#### **IV. New Claims**

Applicants add new claims 8-13 to protect additional aspects related to the present invention. Applicants submit that these claims are patentable over the cited prior art of record, Morimoto, Ino, and Ha.

Claim 8 recites, *inter alia*, forming a dielectric layer having hydrogen on the insulating layer above an upper portion of the photodiode ... [and] diffusing hydrogen ions from the dielectric layer into the photodiode," and claims 9-13 depend from this claim.

As mentioned above, Morimoto is directed to a method for making a solid stage imaging pickup device. Morimoto, Figs. 1(a), 1(b). Morimoto discloses that the method comprises forming a photodiode and CCD register in a substrate 11, forming an insulating film 19 on the photodiode and CCD register, forming an electrode 20 on insulating layer 19, and forming a metal wiring 22. Morimoto, col. 3, line 50 to col. 4, line 35. Furthermore, Morimoto discloses that insulating film 19 can be multilayered and can include a silicon nitride (dielectric) film. Morimoto, col. 5, lines 10-17. However, Morimoto discloses that the nitride film is removed from an upper part of the photodiode prior to any hydrogen annealing. Morimoto, col. 5, lines 61-68. Thus, the invention of Morimoto differs from the invention recited in claims 8-13.

Moreover, the inventions disclosed in Ino and Ha deal with hydrogen annealing in liquid crystal displays. *See* Ino, abstract; Ha, col. 1, lines 8-13. Thus, the inventions of Ino and Ha differ from the invention recited in claims 8-13.

Accordingly, new claims 8-13 are patentable over the cited prior art of record, Morimoto, Ino, and Ha, taken individually or together.

**V. Conclusion**

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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